WATER ALLOCATION
PROGRAM ADVISORY COMMITTEE

MEETING PROCEEDINGS
Thursday, September 26, 2002

1. **Water Allocation Program Development Progress**

Mr. Varin welcomed those in attendance to the third water allocation program development meeting. Ms. Crawley gave an overview of the purpose, content and agenda for the two-hour session. She stated that the first half of the meeting would be devoted to a summary of progress to date and a closer look at content to provide guidance for the eleven committees moving forward. This would include using fact-based scenarios to assist in developing each of the eleven program component areas. Ms. Crawley then reviewed the role of Water Allocation Program Advisory Committee (WAPAC), i.e., "committee of the whole". She stated that for the second half of the meeting Jim Campbell of the US Geologic Survey would review the scope of the water use and availability studies currently underway. The studies are intended to evaluate the amount of water available basin by basin for the state to assist in water allocation decision-making. Ms. Crawley thanked staff with the URI Coastal Resources Center for hosting the web site.

Ms Crawley noted that lead organizations have been established for each of the subcommittees with seventy-one people committed to serve. Given the commitment to include diverse interests and expertise, she mentioned the need to recruit representatives from private industry, major water users, agriculture, the legislature, federal partners, municipal leaders, attorneys, and budget analysts.

Ms. Crawley reported that she met with committee leads on Sept.16, 2002 to review the organization and charge of committees. She distributed background information for distribution to subcommittee members including the Water System Supply Management Plan Checklist, a sample water use study proposal for the Blackstone watershed, a white paper and matrix on water allocation in other states prepared by the New England Water Works Association and various materials from the National Drought Mitigation Center. Ms. Crawley explained the conceptual framework for committees (define the problem, collect information, analyze the information, and focus on goals). She indicated that she would assist the committees in establishing their missions and understanding how their work plans contribute to the overall effort. The next meeting was set for Friday, November 22, 2002.

2. **Using Fact-Based Scenarios To Analyze Major Water Allocation Program Components**

Ms. McGreavy reiterated the need to place the conceptual issues in a real-world context to demonstrate the problem-solving approach. She stressed the need to understand the problems first in order to begin to formulate recommendations as well as the need to make the process manageable. Ms. McGreavy explained that the water allocation effort could be viewed as two levels. There is a micro level, which is the subcommittee level, and a macro level that is the water allocation program advisory committee level. It is at the macro level where the interrelatedness of the components becomes apparent. A review of two basins—the Blackstone and the Wood-Pawcatuck—serves to illustrate these levels, allocation program components and issues. The scenarios indicate available data for decision-making. Ms.

McGreavy stated that the two fact scenarios are purposefully different. The first scenario in the Wood Pawcatuck basin features a proposed 552-acre mixed-use development called Richmond Commons. The second scenario features an urban scenario at Crookfall Brook (Blackstone watershed) where there is a US Army Corps permit regulating stream flow. Water resource management issues and potential solutions will likely be different in one watershed than in another.

A. Research Committee

The Research Committee's problem statement revolves around questions such as, What information do we have? What information don't we have? Each subcommittee will necessarily have a research component to their effort. Ms. McGreavy explained that Water System Supply Management Plans (WSSMPs) have enormous amounts of information in them. This data will eventually be entered into the New England Water Use Data System (NEWUDS). For both basins, water use studies are in draft form. The Research Committee's initial focus will be on how other states allocate water and whether or not Rhode Island needs a water use registration program. The Research Committee will also be looking at what kinds of information systems other states are using to store and manipulate the data.

B. Registration

Using the fact-based scenarios, Ms. McGreavy posed several questions to the group such as, In a shortage, how do we allocate? What uses do we register? Where? We may not need to register so heavily in the Blackstone where we already have a fair amount of information. Ms. McGreavy mentioned the 1990 water use study by Arthur D. Little. She asked, do we look at a whole water use group based on statewide statistics? She noted that large water users vary by watershed. Agricultural uses and residential private wells are major use categories in the Wood-Pawcatuck. However, in the Blackstone, there are more industrial and commercial users as well as public water. If we stay focused on outcomes, how does a registration program address needs? What are the capacity issues for rolling out a registration program versus funding an increase or expansion of existing data collection efforts.

C. Stream Flow

In the Blackstone scenario, Ms. McGreavy stated that Ocean State Power had to truck water in during the drought to maintain operations when stream levels were low. In the Wood-Pawcatuck, there are ongoing water modeling/optimization efforts to help determine an appropriate level of stream flow. The Stream Flow Committee will need to look closely at what the water use studies and models say and consider other information found in local Comprehensive Community Plans, open space plans, recreation plans, etc.

D. Priority Uses

Since water allocation scenarios will be different in the two watersheds, Ms. McGreavy suggested that this committee would need to consider the impact of decisions when setting priorities. For example, when stream flows are low, what is the impact on the environment, to the economy, etc. and how do we prioritize. Who is going to make the decisions as to what is an essential use and what is not? What do current state policy and

planning documents say? Beyond public health and safety, which uses get priority consideration? Which uses would be exempt?

E. Water Rights/Regulatory Authority

Ms. McGreavy stated that the first charge of this committee would be to untangle the complicated regulatory framework and understand the overlapping jurisdictional authorities. The essential question is, who's in charge? Ms. McGreavy pointed out that in the Blackstone, federal agencies such as the US EPA and the US Army Corps have exercised authority. In the Pawcatuck, it's the RI Dept. of Environmental Management, Fish and Wildlife Division . Under either scenario, there are water suppliers (regulated and unregulated), state agencies, special districts and local government involvement. There are multiple rules, plans, and regulatory layers that need to be sorted out. Ms. McGreavy suggested that in the Wood Pawcatuck, there may be more of a focus on private water rights, and in both watersheds, there are potential interstate issues.

F. Out of Basin Transfer

Ms. McGreavy cited the need for supplemental water in the Blackstone during the drought. Water was transported from the Providence system by a water retailer to Ocean State Power in Burrillville. In the Wood Pawcatuck, there are very high consumptive uses of water in terms of agriculture. Whether that water is recharged back into the source basin is not certain. Future allocation considerations in the Wood-Pawcatuck may be more related to infrastructure and new supply. Out-of-basin transfer is both a legitimate use of water and desirable in some cases. Do we tell people they cannot have water in certain areas, or not?

G. Water Rates

Ms. McGreavy explained that once water allocation programs are defined, they would need to be sustained. Some financing options include water rates, impact fees, conservation rates, emergency rates, and exploring opportunities to bank water. Utilities regulated by the Public Utilities Commission have less flexibility to adjust rates or to make improvements to the system without a rate filing application. In the Wood-Pawcatuck, there are areas that are not served by public water at all. Should Rhode Island be pricing water to reflect its true value, and how can the price of water be used as an incentive?

H. Education, Outreach and Technical Assistance

Ms. McGreavy stated that this committee would first address the need for ongoing education of committee participants regarding the Water Allocation program, including web-based information. Other opportunities for education and technical assistance include residential retrofit programs, growth planning and local land use regulations. Conservation education in the Wood-Pawcatuck might be targeted to residential and agricultural users. In the Blackstone, Ms. McGreavy suggested that water audits and business process reengineering may be prudent alternatives for business in terms of technical assistance. Matching the quality of water to the use is also important in either watershed. The Education Committee would assess which educational messages were needed depending on the fact-based scenarios.

I. Water and Wastewater Integration

Ms. McGreavy stated that each scenario has demand, supply, discharge, storage, and recharge considerations. In the Wood-Pawcatuck, there is a need to evaluate water storage and supplemental supply. In the Blackstone, there may be more emphasis on returning water to its source. In terms of a registration program, this committee could decide whether wastewater would be registered. Other connections between components include the need for education, technical assistance, and funding. In terms of rates, this committee would consider whether to charge fees for the entire water cycle.

J. Impact

Ms. McGreavy believed that assessing impact would be very difficult since it entails a wide range of environmental, economic, societal and growth related issues. The Impact Committee was provided a long list of drought impacts as "food for thought". Ms. McGreavy noted that there is an impact quotient related to almost all other program components and that this committee would need to interact with the others on a regular basis.

K. Joint Advocacy and Funding

Ms. McGreavy explained that this effort requires budget analysts, grant providers, and money-minded people to review and further narrow the program in order to focus resources. This committee will ask what can be done to achieve outcomes and what will it cost? What components are compromised if there are constraints? What are solutions? Who will pay? This committee is also responsible for program evaluation. Are we on the right track? Do we need to rethink outcomes, timelines, etc? Is there value to this process? How do we measure success?

Using the fact-based scenarios, Ms. McGreavy demonstrated there are numerous considerations for each program component. She added that there would be increased need for sophisticated information systems. Ultimately, the committees will decide whether a registration program will address the problem, and if so, will it be worth the cost? Ms. McGreavy reminded the group to stay focused on the work-centered analysis diagram that illustrates an outcome-based process for allocating water.

Ms. Scott asked if the water allocation program was going to be focused primarily around emergency related incidences. Ms McGreavy stated that was not the intent referring to her mention of long-range drought scenarios as well as general issues resulting in use conflicts. Ms. Scott next stated that she was concerned that a water use registration system might be different in one place than another. In her opinion, there should be a uniform system statewide. Ms McGreavy stated that the committee would be fully exploring the options for a registration program.

3. US GEOLOGICAL SURVEY PRESENTATION

A. Update on Water Use Assessments and Modeling Projects

Mr. Campbell, Sub District Chief of the US Geologic Survey (USGS), stated that the USGS is undertaking water use and availability studies statewide as well as several

modeling studies in partnership with the Water Resources Board. Two water use studies—the Blackstone and Wood-Pawcatuck—are in draft form. The Pawtuxet and Quinnebaug/Moshassuck studies are underway and should be published in the spring of 2003. The East Bay, West Bay, and South Coastal contracts have been signed. The University of RI-Geosciences Dept. is under contract with the Board to complete the Jamestown study. The Block Island study has been completed. Mr. Campbell explained that the intent is to produce a statewide summary report once all the studies have been completed.

B. New England Water Use Database System (NEWUDS): A Framework for Water Use Registration

Mr. Campbell next described a new relational database called NEWUDS which will be populated with information from the studies and WSSMPs. NEWUDS "captures" water data from withdrawal to discharge. Mr. Campbell explained that in some cases, aggregate uses are calculated using estimation techniques. Water availability calculations in the studies are based on stream flow records when available. Analytical techniques correlate stream flow during a period of no recharge to develop estimates of the yield in stratified sand and gravel deposits. Mr. Campbell pointed out that not every basin has a stream gauge. Alternately, the USGS analyzes sand and gravel deposits to establish a "yield" for each watershed and sub-watershed across the state. A ratio of stress in a water system is calculated by dividing water withdrawals by the amount of water available. The ratio is compared to two different flow statistics: ABF (Aquatic-Base Flow) and 7Q10 (The ratio will often use August as a critical month for stream flow. The statewide summary will offer a more complete picture of stress across basins.

Mr. Campbell then explained a series of water cycle slides stating that precipitation drives the water balance as the input to the system. Surface water outflows include runoff as well as water that infiltrates the ground. Groundwater is either discharged to a stream or storage area and, ultimately, to the ocean. Ms. Karp questioned whether we should look at using a percentage of precipitation to guide water use, rather than a stream flow standard. She suggested a benchmark of 25%. Mr. Campbell stated that the ratio is a better indicator of stress, but that the percentage of precipitation could be evaluated with the data that is presented in the study. He stated that generalizations do not apply and that we need to look basin-by-basin.

Mr. Campbell then reviewed the major water modeling efforts ongoing. He stated that there are three modeling types: groundwater flow modeling, surface water modeling and hydrologic modeling incorporating both groundwater and surface water components. Models help predict ways to maximize withdrawals and minimize impacts. Optimization is a mathematical tool that provides for simulating groundwater withdrawals to minimize the impact on the environment using stream flow as an indicator. The surface water flow model is used to evaluate the effects of changes in land use on each individual stretch of a river. It is a good model for evaluating build-out scenarios. Mr. Campbell summarized other scenarios that can be simulated. He stated that the Wood-Pawcatuck watershed model links two methods to give a much better picture of the entire system. Mr. Campbell stated that the Pawcatuck is one of the better-gauged areas in the state. Nine

stations will be added in critical stream reaches. Actual water use data for agriculture and golf courses will be used instead of estimates. A critical element will be to evaluate the effect of new wells on the entire Wood-Pawcatuck system.

Mr. Campbell next emphasized that groundwater and surface water are one resource; the two systems do not act independently. In the summer months, surface water in the streams consists largely of groundwater discharge. As the groundwater table lowers, the discharge lessens. Groundwater recharge occurs mostly in sand and gravel deposits and is a function of time. Unsaturated sediments serve as rapid infiltration beds that recharge upstream. Mr. Campbell stated that the water use studies do not advocate any particular stream flow level or standard. He explained that flow duration is a frequency curve that indicates how often a given discharge will be equaled or exceeded. All the long term gauging stations have flow duration curves calculated. 7Q10 has duration of 98-99%. ABF varies based on geology and deposits. A central question is how often the water would be lower 'naturally'. Using ABF, 89% flow duration means that the stream would naturally be below that level 11% of the time.

4. Closing Statements

Ms. Crawley thanked Mr. Campbell and members for attending. She announced that the full WAPAC committee would meet on Friday, Nov. 22, 2002 to report findings.

Prepared by Kathy Crawley and Connie McGreavy.